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## THE BALTIC AMBER SNAKE-FLIES (NEUROPTERA)

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The snake-flies, comprising the neuropterous suborder Raphidiodea, have had a long geological record. Like the scorpion-flies (Mecoptera), they appear to have been more extensively represented generically and specifically in previous geological periods than at present. They have been described from the Permian of Kansas and Russia (Carpenter, 1943; Martynova, 1952), the Jurassic of Turkestan (Martynov, 1925; Martynova, 1947), the Miocene of Colorado (Carpenter, 1936), and the Oligocene of the Baltic amber.

For some reason, they are exceedingly rare in the amber. Only one species has been reported in the literature up to the present time; this is Hagen's *Raphidia (Inocellia) erigena*, which was described just about a century ago (1854). My own efforts to secure amber snake-flies, extending over two decades, have yielded but four specimens. Since I have had these at hand for several years and especially since I have little hope of obtaining additional specimens in the near future, I am presenting here an account of this small collection.

Three species are represented by this new material: one of these is Hagen's *erigena*, which turns out to belong to *Fibla*; another is a new species of *Raphidia*, and the third is a very peculiar species, which I am assigning to *Inocellia*.

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## Family Raphidiidae

Genus *Raphidia* Linn.

This genus is now restricted, as far as is known, to the Old World, but it is well represented in Miocene deposits of Colorado (Carpenter, 1936).

***Raphidia baltica*, new species**

## Figure 1

Fore wing: length, 9 mm.; width, 2.5 mm.; costal space narrow, with only 5 crossveins (in type); pterostigma narrow. Hind wing: length, 8 mm.; width, 2.5 mm. Venational details are shown in the figure. Prothorax 2 mm. long, bi-colored; body in general dark brown.

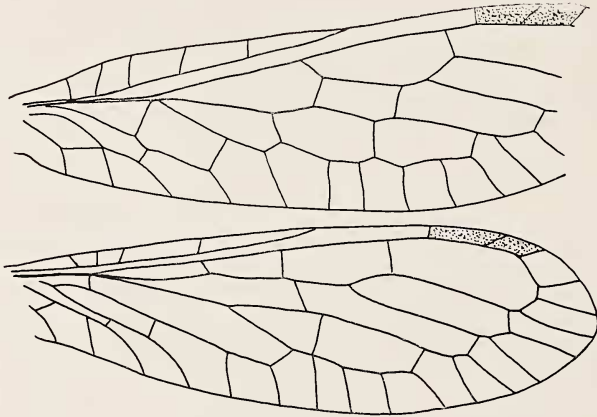


Figure 1. *Raphidia baltica*, n. sp. Fore and hind wings drawn from holotype, No. 5122, MCZ.

Holotype: No. 5122, in Baltic Amber Collection, Museum of Comparative Zoology. This is a complete female, in a somewhat distorted position, with the tip of the right fore wing broken away. This species is a typical *Raphidia*, as shown by the venational pattern, especially the nature of the basal piece of MA in the hind wing (see Carpenter, 1936). It is similar to several living species in its general appearance.

## Family Inocelliidae

Genus *Fibla* Navas

Existing species of *Fibla* are known to occur only in parts of the Old World, although one extinct species has been found in the Miocene of Colorado.

*Fibla erigena* (Hagen)

## Figure 2

*Raphidia* (*Inocellia*) *erigena* Hagen, 1854, Ver. Zool. Bot. Ges., 4:228; Hagen, 1856, in Berendt, Org. Reste, 2(2):83, plate 8, fig. 14.

Hagen's type of *erigena* is presumably lost, but two specimens in the Harvard collection undoubtedly belong here. They are the basis of the following account: Fore wing: length, 10-13 mm.; width 3.5 mm.; costal margin broad. Hind wing: length, 4.5 mm.; width 3 mm. Venational details are shown in the figures. Prothorax 1.8 mm. long, 1 mm. wide.

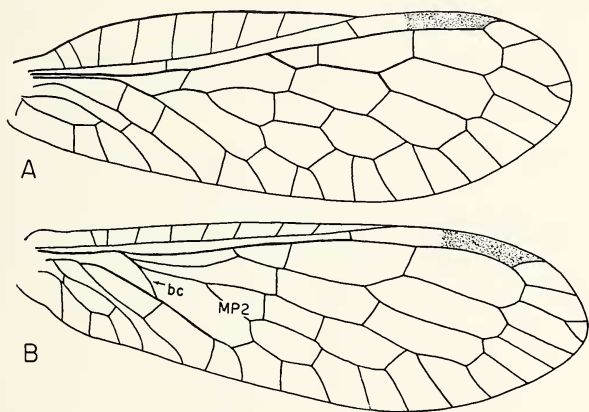


Figure 2. *Fibla erigena* (Hagen). A. Fore wing drawn from specimen No. 5120, MCZ. B. Hind wing drawn from specimen No. 5121, MCZ. For explanation of bc and MP2, see text.

The original Hagen specimen was apparently splendidly preserved; allowing for slight inaccuracies in Hagen's figure, I can recognize no significant differences between his insect and the ones now at hand, which are as follows: No. 5120, with the right wings, head and thorax very well preserved; the other wings and the abdomen have been broken

away. No. 5121, a female, with the left wings and complete body (including ovipositor) well preserved.

This insect has the characteristics of an inocelliid, including the absence of ocelli and the pterostigmal crossvein and the presence of the forked MP2 and the rectangular head. Its assignment to *Fibla* is based on the nature of the basal piece of MA in the hind wing, as contrasted to that in *Inocellia* (see, for example, figure 2).

#### Genus *Inocellia* Schneider

This genus is widely distributed, mainly in the holarctic realm, but it includes relatively few species. Extinct representatives have not previously been known.

#### *Inocellia peculiaris*, new species

##### Figure 3

Fore wing: length 6 mm.; width 1.8 mm.; costal margin rather narrow, with only four crossveins. Hind wing: length 5.3 mm.; width, 1.6 mm.; the short vein (bc) from base of MP to CuA is perpendicular to CuA, not oblique. MP2 is without the usual fork occurring in inocelliids. Head, 1.4 mm. long; prothorax short, 1 mm. in length. General body color, dark brown.

Holotype: No: 5123; Museum of Comparative Zoology.

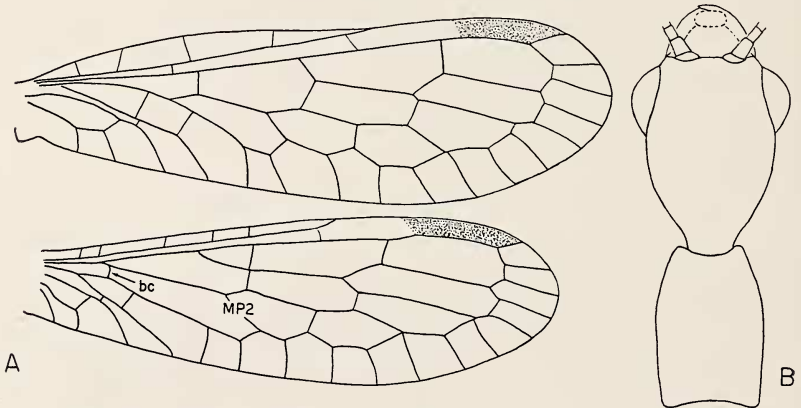


Figure 3. *Inocellia peculiaris*, n. sp. A. Fore and hind wings of holotype, No. 5023, MCZ. B. Head and prothorax of holotype. For explanation of bc and MP2, see text.

The specimen, a male, is well preserved, with all wings complete and the body structure showing in detail.

This species appears to have some features of both the raphidiids and inocelliids, and I have placed it in *Inocellia* only in preference to making a new genus for it. The ocelli are absent and the antennae are inserted well anterior to the compound eyes, as in the Inocelliidae; also, its pterostigma is without a transverse veinlet and the genital structures are inocelliid. On the other hand, the head is not so quadrate as that in living inocelliids, MP2 is unbranched, and the vein labeled bc is transverse, as in the raphidiids. Furthermore, the small size of the insect, with a wing expanse of 13 mm., is more like that of the raphidiids than of the inocelliids. However, I prefer not to erect a new genus for this one species, and since the more obvious characteristics, such as lack of ocelli and pterostigmal cross-vein, are inocelliid in nature, I have tentatively placed it in *Inocellia*.

Although the number of snake-flies known to us in the Baltic amber is still very small, it is interesting to note that the genus *Agulla* is not represented and that the genus *Inocellia* is represented by only a very peculiar species, which may, in fact, not belong there at all. This lends some weight to my previous suggestion (1936) that *Agulla* and *Inocellia* have evolved more recently than *Raphidia* and *Fibla*, which are well represented in the Tertiary of both the New World (Colorado) and the Old (Baltic amber).

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